IN THE CLAIMS

Please amend the claims as follows:

Claims 1-25 (Canceled).

Claim 26 (New). A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising:

a correlator which computes an auto-correlation function of the input image signal based on a result obtained by thinning a pixel of the input image signal;

a generator which generates a specific frequency component signal by filtering the auto-correlation function; and

a detector unit configured to detect the watermark information from the specific frequency component signal.

Claim 27 (New). A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising:

a correlator which computes an auto-correlation function of the input image signal based on a result obtained by thinning a pixel of the input image signal;

a first accumulator which accumulates the auto-correlation function for a first period of time to generate a first accumulation signal;

an extraction unit configured to extract a specific frequency component signal from the first accumulation signal;

a normalizing unit configured to normalize an amplitude of the specific frequency component signal;

a second accumulator which accumulates the normalized specific frequency

component signal for a second period of time longer than the first period of time to generate a

second accumulation signal; and

a detector unit configured to detect the watermark information from the second

accumulation signal.

Claim 28 (New). A digital watermark detection apparatus which detects watermark

information embedded in an input image signal, comprising:

a correlator which computes an auto-correlation function of the input image signal;

a first accumulator which accumulates the auto-correlation function for a first period

of time to generate a first accumulation signal;

an extraction unit configured to extract a specific frequency component signal from

the first accumulation signal;

a normalizing unit configured to normalize an amplitude of the specific frequency

component signal;

a second accumulator which accumulates the normalized specific frequency

component signal for a second period of time longer than the first period of time to generate a

second accumulation signal;

a detector unit configured to detect the watermark information from the second

accumulation signal,

wherein at least one of the correlator, the first accumulator, the normalizing unit, and

the second accumulator includes a processor; and

a controller which periodically stops computation of the correlator to reduce an

operation amount of the correlator per unit time, if a throughput of the processor is lower than

a threshold value.

Claim 29 (New). A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising:

a correlator which computes an auto-correlation function of the input image signal;

a first accumulator which accumulates the auto-correlation function for a first period of time to generate a first accumulation signal;

an extraction unit configured to extract a specific frequency component signal from the first accumulation signal;

a normalizing unit configured to normalize an amplitude of the specific frequency component signal;

a second accumulator which accumulates the normalized specific frequency component signal for a second period of time longer than the first period of time to generate a second accumulation signal;

a detector unit configured to detect the watermark information from the second accumulation signal,

wherein at least one of the correlator, the first accumulator, the normalizing unit, and the second accumulator includes a processor; and

a controller which periodically stops computation of the correlator and increases the second period of time, if the throughput is lower than a threshold value.

Claim 30 (New). A digital watermark detection apparatus which detects watermark information embedded in an input image signal, comprising:

a correlator which computes an auto-correlation function of the input image signal;

a first accumulator which accumulates the auto-correlation function for a first period of time to generate a first accumulation signal;

an extraction unit configured to extract a specific frequency component signal from the first accumulation signal;

a normalizing unit configured to normalize an amplitude of the specific frequency component signal;

a second accumulator which accumulates the normalized specific frequency component signal for a second period of time longer than the first period of time to generate a second accumulation signal;

a detector unit configured to detect the watermark information from the second accumulation signal;

a third accumulator which accumulates the normalized specific frequency component signal for a third period of time longer than the first period of time and shorter than the second period of time, to generate a third accumulation signal,

wherein the detector unit provisionally detects the watermark information from the third accumulation signal a given number of times to obtain a plurality of provisional detection results, the detector unit determining that the detection results based on the second accumulation signal are valid, if more than half of the provisional detection results coincide.